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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. |
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| 08/823,980 | 03/25/97 | WEINER | A 0938.002 (B&W) |

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EXAMINER

SCHWADRON, R

| ART UNIT | PAPER NUMBER |
|----------|--------------|
| 1644 | |

DATE MAILED: 03/27/98

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

08/823,980

Applicant(s)

Welner et al.

Examiner

Ron Schwadron, Ph.D.

Group Art Unit

1644



☒ Responsive to communication(s) filed on Jan 8, 1998

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 35 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claim

☒ Claim(s) 40-53 is/are pending in the application

Of the above, claim(s) 43, 44, 46, 47, 50, and 51 is/are withdrawn from consideration

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 40-42, 45, 48, 49, 52, and 53 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☒ None of the CERTIFIED copies of the priority documents have been
☐ received.

☐ received in Application No. (Series Code/Serial Number) _____

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s) _____

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

15. Applicant's election with traverse of Group I, claims 40,42-53 and species A (42,45,48-51) and subspecies A (48 and 49) in Paper No. 42 is acknowledged. The traversal is on the ground(s) that are stated in said paper. Applicants arguments have been found persuasive with regards to the particular circumstances of the instant application and therefore claim 41 has been rejoined to Group I. The other aspects of the restriction requirement are maintained.

The requirement is still deemed proper and is therefore made FINAL.

16. Claims 43,44,46,47,50,51 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected species, the requirement has traversed in Paper No. 42.

17. Claims 40-42,45,48,49,52,53 are under consideration.

18. Applicants need to update the status of all US patent applications disclosed in the specification (eg. specification, page 1, 08/757958 is abandoned, 08/061699 is abandoned).

19. The amendment filed 9/18/97 is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows.

The new matter is SEQ. ID. No. 8 wherein said sequence recites Xaa at a variety of positions in said sequence. 37 CFR 1.822 (b) discloses that Xaa as used in an amino acid sequence encompasses an "unknown or other" amino acid. The Sequence listing filed 9/18/97 does not define Xaa as used in SEQ. ID. No. 8. As used in SEQ. ID. No. 8, Xaa could encompass any amino acid or an unknown amino acid. The specification as originally filed was not filed with SEQ. ID. No. 8, it was filed with a Sequence listing that listed a single sequence that was not SEQ. ID. No. 8. There is no disclosure of SEQ. ID. No. 8 in pages 1-43 of the specification or the claims as originally filed. Figure 2-1 of the specification discloses the HCV E2HV sequences for 90 HCV isolates (see Brief description of drawings and specification, Example 1). Example 1 discloses that Figure 2 shows a conserved motif from 90 E2HV isolates. This motif is listed as the first line of Figure 2-1 as ".T.VTGG.AARTT.G..SLF..G.SQ.IQLI". However,

there is no disclosure in the specification or Figure 2 that "." as listed in the consensus sequence means "unknown or other amino acid". There is no disclosure in Figure 2 or the specification as to what "." means or encompasses in the context recited in the consensus motif. Figure 2 seems to possibly indicate that "." as recited in said sequence refers to a variety of different amino acids that were found in said sequence at the position listed in the 90 sequences actually disclosed in Figure 2. However, the "." recited in said sequence does not refer to any amino acid or an unknown amino acid because this is not disclosed in Figure 2. Figure 2 possibly discloses that the "." position in the consensus sequence was found to be a particular amino acid recited in the 90 sequences disclosed in Figure 2. The consensus sequence also seems to specifically refer to the 90 sequences disclosed in Figure 2 and not encompass permutations wherein "." at the second position is the amino acid disclosed in sequence 2, while "." third position is derived from sequence 5, etc. The consensus sequence simply discloses that of the 90 sequences disclosed in Figure 2, that most of said sequences had a pattern of amino acids generally similar to that in the consensus sequence. The specification does not disclose the consensus sequence recited in Figure 2 wherein "." represents any amino acid or unknown amino acid. It is equally unclear if "." as recited in the consensus sequence actually even had a contemplated amino acid at said position or whether "." simply designated a portion of the sequence that was generally more variable than other portions of the consensus sequence which were assigned a particular amino acid.

Applicant is required to cancel the new matter in the reply to this Office action.

20. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

21. Claims 40-42,45,48,49,52,53 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

There is no support in the specification as originally filed for the recitation of "Xaa-Thr-Xaa-Val-Thr-Gly-Gly-Xaa-Ala-Ala-Arg-Thr-Thr-Xaa-Gly-Xaa-Xaa-Ser-Leu-Phe-Xaa-Xaa-Gly-Xaa-Ser-Gln-Xaa-Ile-Gln-Leu-Ile (SEQ. ID NO:8)" in claim 40. 37 CFR 1.822 (b) discloses that Xaa as used in an amino acid sequence encompasses an "unknown or other" amino acid. The Sequence listing filed 9/18/97 does not define Xaa as used in SEQ. ID. No. 8. As used in SEQ. ID. No. 8, Xaa could encompass any amino acid or an unknown amino acid. The specification as originally filed was not filed with SEQ. ID. No. 8, it was filed with a Sequence listing that listed a single sequence that was not SEQ. ID. No. 8. There is no disclosure of SEQ. ID. No. 8 in pages 1-43 of the specification or claims as originally filed. Figure 2-1 of the specification shows the HCV E2HV sequences for 90 HCV isolates (see Brief description of drawings and specification, Example 1). Example 1 discloses that Figure 2 shows a conserved motif from 90 E2HV isolates. This motif is listed as the first line of Figure 2-1 as ".T.VTGG.AARTT.G..SLF..G.SQ.IQLI". However, there is no disclosure in the specification or Figure 2 that "." as listed in the consensus sequence means "unknown or other amino acid". There is no disclosure in Figure 2 or the specification as to what "." means or encompasses in the context recited in the consensus motif. Figure 2 seems to possibly indicate that "." as recited in said sequence refers to a variety of different amino acids that were found in said sequence at the position listed in the 90 sequences actually disclosed in Figure 2. However, the "." recited in said sequence does not refer to any amino acid or an unknown amino acid because this is not disclosed in Figure 2. Figure 2 possibly discloses that the "." position in the consensus sequence was found to be a particular amino acid recited in the 90 sequences disclosed in Figure 2. The consensus sequence also seems to potentially refer to the 90 sequences disclosed in Figure 2 and not encompass permutations wherein "." at the second position is the amino acid disclosed in sequence 2, while "." third position is derived from sequence 5, etc. The consensus sequence simply discloses that of the 90 sequences disclosed in Figure 2, that most of said sequences had a pattern of amino acids generally similar to that in the consensus sequence. The specification does not disclose the consensus sequence recited in Figure 2 wherein "." represents any amino acid or unknown amino acid. It is equally unclear if "." as recited in the consensus sequence actually even had a contemplated amino acid at said position or whether "." simply designated a portion of the sequence that was generally more variable than other portions of the consensus sequence which were assigned a particular amino acid. There is no written description in the specification as

originally filed of the claimed invention (eg. it constitutes new matter).

Regarding applicants comments in the amendment filed 1/8/98, about Example 1 and Figure 2 of the specification, said passages of the specification do not provide support for the claimed invention for the aforementioned reasons.

22. Claims 40-42,45,48,49,52,53 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

There is no support in the specification as originally filed for the recitation of "wherein the amino acid sequence motif is the only sequence corresponding to a hypervariable domain of hepatitis C virus" in the context recited in claim 40. There is no written description in the specification as originally filed of the claimed invention (eg. it constitutes new matter).

Regarding applicants comments in the amendment filed 1/8/98, about Example 1 and Figure 2 of the specification, said passages of the specification do not provide support for the claimed invention.

23. Claims 48,49 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

There is no support in the specification as originally filed for the recitation of "comprising all or portion of a particle forming protein" in the context recited in claim 48. There is no support in the specification as originally filed for the recitation of "fused with an amino acid sequence encoding all or portion of a particle forming protein" in the context recited in claim 49. There is no written description in the specification as originally filed of the claimed invention (eg. it constitutes new matter).

Regarding applicants comments in the amendment filed 1/8/98, the particular passages of the specification which applicant refers to disclose "antigens comprised of the SLF--G motif" fused to particle forming proteins or "portions of the particle-forming protein coding sequence may be replaced with codons encoding the SLF--G epitope". However, said passages do not

disclose the sequence recited in the claims fused to particle forming proteins or a portion of a particle forming protein. In addition, there is no disclosure in said passage of the specification of the peptide recited in claim 49 fused with a portion of a particle forming protein.

24. Claim 52 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

There is no support in the specification as originally filed for the recitation of "immunologic composition" in claim 52. There is no written description in the specification as originally filed of the claimed invention (eg. it constitutes new matter).

Regarding applicants comments in the amendment filed 1/8/98, the particular passages of the specification which applicant refers to disclose a vaccine, not an "immunologic composition".

25. Claims 40-42,45,48,49,52,53 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The specification is not enabling for the claimed peptides wherein the peptides are "immunogenic". The claims recite that the peptide recited in the claims is immunogenic. The claims under consideration encompass a vast number of different peptides because of the recitation of Xaa in various portions of the formula used to depict the claimed peptide. There is no disclosure in the specification as to which of the vast number of peptides encompassed by the claimed peptide are immunogenic and which are not. The claims under consideration do not read on naturally occurring peptides that are found in HCV. The claims under consideration encompass peptides that are not found in HCV. In fact, the peptide of claim 40 and 53 is not found in nature (eg. it represents a "consensus" peptide based on frequently occurring amino acids found in 90 sequenced HCV isolates, while said sequence is not actually found in any of the sequenced isolates). There is no evidence of record that such a peptide exists in nature. It would require undue experimentation to determine which of the vast numbers of peptides encompassed by the claims under consideration are immunogenic and which are not. Regarding the peptide disclosed

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in Example 2 in the specification, said peptide is not encompassed by the claimed peptide (eg. it differs in amino acid sequence from the claimed peptide). The art recognizes that antibodies bind to a particular three dimensional epitope formed by a particular peptide epitope (see Berzofsky page 176, second column, continued on page 177). There is no disclosure in the specification that the sequence recited in claim 40 contains an immunogenic epitope which does not have a Xaa inserted in the middle of said epitope. In fact, there is no disclosure in the specification of the nature of actual immunogenic epitopes contained in the claimed peptide. The specification discloses in Example 2 that the peptide of SEQ. ID. No. 2 contains three different potential epitopes bound by antibodies. However, none of these epitopes are found in the claimed molecule. Thus, there is no evidence of record that the claimed invention actually contains immunogenic epitopes. Even if the claimed invention included naturally occurring HCV sequences (which it does not), Weiner et al. (1992) establish that not all naturally occurring HCV E2/NS1 derived peptides are immunogenic (see paragraph 18 of the Office action mailed 7/24/96). However, the claimed invention is limited to nonnaturally occurring HCV derived peptides because the amino acid motif recited in the claim encompasses a vast number of peptides wherein said peptides are not found in HCV. The art recognizes that antibodies bind to a particular three dimensional epitope formed by a particular peptide epitope (see Berzofsky page 176, second column, continued on page 177). The claims under consideration encompass nonnaturally occurring peptides which may or may not possess an immunogenic epitope because said peptides do not possess a three dimensional peptide epitope similar to that occurring in a naturally occurring HCV peptide. It would require undue experimentation determine what peptides encompassed by the claimed invention are immunogenic and which peptides were not.

26. No claim is allowed.

27. The Group and/or Art Unit location of your application in the PTO has changed. To aid in correlating any papers for this application, all further correspondence regarding this application should be directed to Art Unit 1644.

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28. Papers related to this application may be submitted to Group 1640 by facsimile transmission. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). Papers should be faxed to Group 1640 at (703) 305-3014.

29. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Ron Schwadron whose telephone number is (703) 308-4680. The examiner can normally be reached Tuesday through Friday from 8:30 to 6:00. The examiner can also be reached on alternative Mondays. A message may be left on the examiners voice mail service. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ms. Christina Chan can be reached on (703) 308-3973. Any inquiry of a general nature or relating to the status of this application should be directed to the Group 1640 receptionist whose telephone number is (703) 308-0196.



RONALD B. SCHWADRON
PRIMARY EXAMINER
GROUP 1800 1640

Ron Schwadron, Ph.D.

Primary Examiner

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March 26, 1998